No 34 Agrostis pallida Trin ?
Cal. redtop. Meadows, Sonoma Co: April.

No 35 Alopecurus pratensis, L.
Wet meadows, Ukiah city, Apr.

No. 36 Beckmannia erucaeformis, Host.
Wet places, Ukiah City, Apr.

No. 37 Festuca microstachys, Nutt.
Woods. Geysers Sonoma Co. Apr.

No. 38 Phalaris intermedia, Bosc
Meadows, Ukiah City, Apr.

No 39 Carex Geyeri Boot
Shaded places, Ukiah city, Apr.

No. 40 Melica poaeoides, var. ?
Parkwoods, Ukiah city, Apr.

No 41 Lophochlaena Californica, Nees.
Santa Rosa, Wet meadows, Apr.

No. 42 Agrostis pallida, Trin ?
Dry clay soil, Ukiah city, Apr.

No. 43 Atropis Californica, Munro
Meadows, S. F. April.

No. 44 Festuca microstachys, Nutt
Shaded places, Cloverdale, Apr.

Bolander's California coll.

No. 1. Agrostis pallens, Trin. ?
near San Francisco, in loose soil, June.

No 2. Gastridium australe, Beauv.
Dry hills, near San F., July.

No. 3. Calamagrostis sylvatica, Trin.
Redwoods, near Redwood City, June.

No 4, Calamagrostis Aleutica, Trin.
Oakland Redwoods hills, June.

No. 5 Agrostis exarata, Trin.
Moist places, Searsville, June.

No. 6 Hierochloa macrophylla, Thurber
Redwoods, Marin Co., April.

No. 7. Trisetum barbatum, Stead.
Shaded places, Oakland, Apr.

No. 8. Panicum thermale, Bol.
Warm loose soil, Geysers, Sonoma County, April.

No. 9. Brizopyrum Douglasii, Hook.
Loose drifting land, San F., Apr.

No. 10 Danthonia Californica, Bol.
Meadows, Oakland, Apr.
No. 11. Stipa eminens, Cav.
Dry hills, Oakland, April.
no. 12. Bromus virens, Nutt.
Every where, San F. April.
No. 13 Melica imperfecta, Trin.
Moist shady hillsides, S. F. Apr.
No. 14 Festuca microstachys, Nutt
Loose drifting sand, S. F. Apr.
No. 15 Aira elongata, Hook.
Moist places, Oakland, Apr.
No. 16 Hordeum pratense, L.
Fields & meadows, Oakland, Apr.
No. 17 Elymus condensatus, Presl.
Borders of wet places, Oakland, June
No 18. Agrostis asperifolia, Torr.
Swampy places. S. F. May.
No. 19 Polypogon fugax, Nees.
Salt marshes, Oakland, June.
No. 20 Carex globosa, Boot (?)
Oakland, Redwood hills, May
No. 21 Carex Hookeriana, Dew.
Mdows, Oakland, Apr. & May.
No. 22 Carex Hartwegii Boot (?)
Redwoods, Oakland, May.
no. 23 Festuca Myurus, L.
Meadows, S. F. May.
No. 24 Polypogon Monspeliensis, Desf.
Wet places, S. F. June
no. 25 Sitanion elymoides, Rafin.
Dry hillsides, Oakland, S. F. May
No. 26 Festuca microstachys, Nutt
Dry hills, S. F. May.
no 27 Carex Sitchensis, Presl.
Borders of Oakland slough, May.
no 28 Avena fatua, L.
Hillsides, Oakland, Apr.
No. 29 Trisetum cernuum, Trin.
Fields, Mch. & Apr.
No 30 Agrostis exarata, Trin.
Cañons at Oakland, May.
No 31 Koeleria cristata, Pers.
Dry hills, S. F. April.
No 32 Melica poaeoides, Nutt.
Dry hillsides, Oakland, Apr.
no. 33 Aira danthonioides, Trin
Moist places, Oakland, Apr.

List of
Bolander's
California coll.

No. 45. Elymus Sibiricus, L.
Meadows, Cloverdale, Apr.
No. 46 Festuca scabrella, Torr.
Bunch-grass, S. F. April.
No. 47 Melica stricta, Bol.
Virginia City, June.
No. 48 Hordeum murinum, L.
Roadsides, S. F. April.
No. 49 Lolium temulentum, L.
Among grain, Oakland, Apr.
No. 50 Carex
Cloverdale, April.
No. 51 Carex Hookeriana, Boot.
Santa Rosa. Meadows, Apr.
No. 52 Carex
Cloverdale, Meadows, Apr.
No. 53
Cañons, Santa Cruz, Coast range June
No. 54 Festuca microstachys, Nutt
Hillsides, Ukiah City, Apr.
No. 55 Agrostis verticillata, Vill
Wet places S. F., June.

no. 56 Phalaris amethystina
Trin.
Oakland. Cañons, June.

no. 57

Salt marshes, Oakland, May

no. 58 Adiantum Chilense,
Kaulf.
Oakland, April.

no. 59 Pellaea mucronata,
Eaton.
Dry hills, Ukiah City, Apr.

no. 60 Pellaea andromedaefolia,
Eaton
Dry hills, Ukiah City, Apr.

No. 61 Aspidium argutum,
Kaulf.
Oakland, April.

no. 62 Aspidium munitum,
Kaulf.
Oakland, April.

6112, 6071. Aira caespitosa Linn.
/ fide Col. Munro.
Aira elongata   no number
6072. Aira danthonioides Trin
4758 } loose
4744 } compact panicled form of Trisetum cernuum Trin
5019. Trisetum subspicatum
var. muticum Bol.
there seems to be but little doubt that these sp. must be referred to this species.
6104. Danthonia sericea Nutt.
4705. Poa brevifolia Muhl.
6113. Atropis californica Munro
5073. 5068, 5076 Poa alpina
6115. Poa sylvestris Gray
older specimens agree very well with those sent to me by Dr. Engl.
6014. Poa leptocoma -
6126. Eragrostis poaeoides var
megastachya ~~Beauv~~ Link
6125. Eragrostis pilosa Beauv.
6074 Brizopyrum Douglasii Hook.
5026 Glyceria pauciflora (6111)
6108 " " fluitans

Bolander's List of Grasses.

6070 Hierochloa macrophylla Thurb.
Col. Munro declares it to be borealis.
4840. Panicum dichotomum L.
6127 Panicum sanguinale L.
4802. Stipa setigera Presl. fide Col. Munro
Steudel's description agrees with it as perfect as it could be expected from any descript. Prof. Thurb. however calls it St. eminens Cav. (see my sets publ. before)
5020. 5038. Stipa occidentalis Thurb.
6469. 6109. 5078. 6099. 4865, 6469. 4692 =
Stipa viridula Trin.
It is possible that a more lengthened examination might be able to find some constant differences
6116. Stipa Richardsonii Link ???
6097. Stipa Kingii Bol. sp. nov.
In honor of Clarence King my gallant chief in the exp. of 1866 across the Sierras
6096. Vilfa (Sporob.) ramulosa H.B.
6095 Vilfa (" ") asperifolia Nees et Mey.
4836 Vilfa airoides Trin
6092 Vilfa depauperata Torr
6124 Vilfa
6090 Vilfa (Sporobolus)
{ both are since years in the hands of Prof. Thurber. seem to be new.

6472. Agrostis canina Lin. ?
The flowers of my specimens are larger than in the sp. I possess from other parts of the world.

5070 Agr. exarata Trin. Alpine form.

6105, 6078, 6079. 658 of Brewer and my Nº 42 Nº 5, 30, 68. of my Grass-sets belong to Agrostis exarata Trin. This sp. includes Agrostis microphylla Steud.

6102. Agrostis Hillebrandii Thurb. sp. nov.

4801. Nº ~~42~~ 34 of sets Agrostis pallida DC. fide Thurb. Col. Munro makes it Agr. virescens and Mexicana HB. I have carefully compared different descriptions Steudel's and Kunth's in his Suppl. both are at variance in some important points. Prof. Thurber's determination I like better though my Europ. specimens are much smaller.

6465 Agr. pallida DC.

6465.b. same, but awnless.

6103. Agrostis vulgaris With.

6107, 6106, 4842 Agrostis scabra Willd

4954. Seems to be a sickly state of Ag. vulgaris.

3064 Agrostis
I shall leave this to you to decide

6466. Agrostis
May be omitted untill I can procure better specimens.

* * *

6093. Muhlenbergia gracilis Tri
6090 Cinna arundinacea var pendula Trin.
6082 Polypogon Monspeliensis Desf.
6083 Gastridium australe Beauv.
6094 Vaseya comata Thurb.

* * *

6084, 4762 Calamagrostis Aleutica Bong
6098 Calamagr. Breweri Thurb.
6470. 5071 Cal. sylvatica DC
6088, 6087 Calamagr. Canadensis Michx
Calam. stricta not numbered but occurs in Yosemite V. and the higher Sierras
6471. Calamag. next likely to varia
4787, 4766 Calamagrostis Lapponica Trin

Glyceria airoides Thurb. 5044. 6114.
" nervata not numbered
Lophochlaena Californica Nees 6075
Melica imperfecta Trin. 6076
" " poaeoides Nutt. 6119 or 6120
this form was also collected on Mt Dana
Melica poaeoides var inflata Bol. 6121.
Melica poaeoides var. bromoides Bol. N: 40 sets 6119
Melica poaeoides var. acuminata Bol. 4698
Melica stricta Bol. Numb. 47 of sets
Melica poaeoides var. brevi-aristata Bol
(my number 53 of sets)
Redwoods Humboldt Co. 67. also at Santa Cruz
Col. Munro considers this a new sp. of Melica
and Prof. Thurber left it undetermined.
4861. Melica aristata sp. nov.
6118 Festuca microstachys var ciliata
6073. " " pauciflora Thurber
6100, 5067. 5066. Fest. violacea Gaud. ??
6085. Elymus condensatus Presl.
6080 " " Sibiricus L.
5023. Triticum caninum Schreb.
6110 " " repens mixed with T. aegilopoides Turcz.

6468. Triticum aegilopoides

Ind.– HH.

could it be T. divergens of Dougl.

A Lepturus and a Festuca are left so far undetermined. The Festuca has been in the hands of Prof. Thurb.; Brewer said it was new. It is the last Festuca in my sets and 4704 of late. Consequently Lepturus is the only one for me to determine.

Enclosed I send you a few specimens of an Agrostis collected 1865 at Auburn on dry hills and sent to Prof. Thurber who never acknowledged the receipt. It is beyond a doubt Ag. arachnoides Ell. when compared with specimens from Dr. Engl. collected in Arkansas.

I wish to say yet that I will continue to study the grasses untill I am satisfied with my own work.

Please command freely

Yours
most sincerely
Henry Bolander

Enumeration of H. N. Bolander's Grasses.

I have copied Bolander's list & added my own notes, so that you can have them both together. My talk is always in brackets — the numbers I have seen are marked! (G. T.)

6070! Hierochloa macrophylla Thurb. [in Report of Cal Geol. Survey, ined.]

Col. Munro declares it to be borealis.

[This seems to me to be a distinct species, as aside from the very large leaves (12'–18' long & 4"–6" wide) the glumes are always 3-nerved, & greenish (never becoming brown) very obtuse and barely equalling the sterile florets, which are notched at the broad apex & often mucronate. Should be compared with H. repens, Host, which is generally referred to H. borealis —]

Redwoods, Marin Co.

4840! Panicum dichotomum, Lin. Yosemite Valley

6127! Panicum sanguinale, Lin.

4802. Stipa setigera Presl. fide Col. Munro. Steudel's description agrees with it as perfect as it could be expected from any descript. Prof. Thurber calls it S. Eminens. Cav (See my sets publ. before.)

[I find no 4802 in either Brewer's set or in that of the State Survey. In the latter set are very fine specimens of S. setigera, with the copious panicle beautifully tinged with purple; these have no number & are marked "Stipa eminens, Monte del Diablo 9/4" I have not his previously published set of grasses and do not know what I there called S. Eminens. The chief distinction between the two is that S. eminens has the palea hairy all over & the other only partially so —

5020! 5038! Stipa occidentalis Thurb. [in Report of Cal. Geol. Survey; in ed.]

[A very distinct species with a plumose awn, which I first met with among the grasses of the U. S. Expl. Expedition, from Oregon —] Yosemite Trail alt. 8000 ft.

6469. 6109! 5078! 6099! 4865! 4692! Stipa viridula, Trin.
It is possible that a more lengthened examination
might be able to find some constant differences.
[Some of the specimens have a very slender and
much elongated panicle, but I think them all rightly
referred] Yosemite Valley & Big-tree Grove.
6116! Stipa Richardsonii Link ??? S. Sibirica
[The contracted panicle, long upper palea, caducous
awn & short ligulae do not agree with the descrip-
tion of S. Richardsonii, but do with that of S. Sibirica
Lamarck. I have no specimens of either. Please
compare, also with Ledeb. Icon. Flor. Altai. t. 99]
Mono Pass. alt. 8000 ft.
6097! Stipa Kingii, Bol. sp. nov.
In honor of Clarence King my gallant chief in the
Exp. of 1866 across the Sierras.
[A very pretty little species, allied to S. mucronata
but distinct] Upper Tuolumne meadows, alt 9.700 ft.
6096! Vilfa (Sporob.) ramulosa H.B.
[Sporobolus ramulosus Kunth] Mono Lake.
6095! Vilfa (Sporob.) asperifolia, Nees & Mey.
[Sporobolus asperifolius Nees & Mey., with smoother
foliage than I have before seen] Mono Lake.
4836! Vilfa airoides Trin.
[Sporobolus airoides Torr.] San Joaquin Valley.
6092! Vilfa depauperata Torr.
[The form labelled by Nutt. in Herb. Acad. Sporobolus
nodosus.] Yosemite Valley.
6091! Vilfa (Sporobolus) = V. gracillima n. sp.
filiformis Thurb.
[Vilfa depauperata Torr. var. filiformis Thurb. I then put
Brewer collected this on the Sierra Nevada.
it with V. depauperata, and on examining it now
can do nothing else with it. It is just the Sporobolus
filiformis, Nutt. Herb. Acad. V. depauperata Torr was

founded upon a very diminutive specimen; its
varies greatly & the largest form has been called
V. utilis by Torrey. We must either regard the present
as one of its forms or make a half dozen or
more new species. Many florets in this have a
distinct awn, but this is not constant.]
Yosemite Valley.

6124.! Vilfa.

[Vilfa rigens, Trin.? I had this a long while
ago from Blake & Bolander. The best I can
do with it is to refer it as above. It does not quite
agree with Trin's figure (Trin. Icon. t. 250), but the
differences are not so great as between his descrip-
tion in the Icones & in his Agrostideae.] Sonora.

6472! Agrostis canina, Linn.
The flowers of my specimens are larger than in the
Sp. I possess from other parts of the world.
5070. Agrostis exarata Trin. Alpine form. Basin
of Upper Tuolumne, Alt. 10000 ft.

6105! 6078! 6079! 658 of Brewer and my no 42. No 5. 30. 18
of my grass sets belong to Agrostis exarata Trin. This
Sp. includes Agrostis microphylla Steud.
6102! Agrostis Hillebrandii Thurb. [in Rept. Cal. Geol. Survey, ined.]
4801! No 34 of set. Agrostis pallida, DC. fide Thurb.
Col Munro makes it Agr. virescens & Mexicana H.B. &
have carefully compared different descriptions, Steudel's
& Kunth's in his Suppl. both are at variance in some
important points. Prof. Thurber's determination I
like better, though my European specimens are much
smaller. — Anderson Valley - Coast.
6465. Agr. pallida DC.
6465, b. Same but awnless.
6103! Agrostis vulgaris, With.
4954! Seems to be a sickly state of Ag. vulgaris.
6107! 6106! 4842. Agrostis scabra Willd.

5064! Agrostis, ~~which~~ I shall leave this to you to decide.
[Agrees very well with Agrostis Scouleri. Trin, but has
more rays to the panicle. Please compare.]
6466. Agrostis. May be omitted until I can procure better
specimens
6093! Muhlenbergia gracilis Trin. Yosemite Valley.
6090! Cinna arundinacea var. pendula. Trin [Gray]
6082! Polypogon Monspeliensis Desf.
6083! Gastridium australe, Beauv.
6094! Vaseya comata Thurb.
[Remarkably fine specimens, some 2 1/2 feet high, with purpl-
ish panicles & the culms more or less tinged.]
6084! 4762! Calamagrostis Aleutica Bong. [Trin.]
6098! Calamagrostis Breweri Thurb [in Rept. Cal. Geol. Survey ined.]
[Our most delicate species; first collected by
Prof Brewer in 1863 near the summit of Carson's Pass,
alt. 8000 ft. and by Mr Bolander in 1866 in the meadows
of the Upper Tuolumne; Alt. 9.700 feet.]
6088! 6087! Calamagrostis Canadensis, Michx.
6470! 6471! Calamagrostis sylvatica. DC.
Calam. stricta, not numbered, but occurs in
Yosemite V. and the higher Sierras.
6471! Calamag. — next likely to varia.
[I am poorer off in Calamagrostis than in any other
large genus & my specimen of C. varia is of no
help — Please compare]
4887. 4766! Calamagrostis Lapponica, Trin.
[Bolander in one of his notes seems to be quite satisfied
with this determination. I have only one very young
[illegible] specimen — Please look at this, as it is
in your pet genus]
6112! 6071! Aira caespitosa Linn. fide Col. Munro.
6072! Aira danthonioides Trin.

4758 } loose
4744.! } compact panicled forms of *Trisetum cernuum* Trin.
[This I at one time took to be a form of T. cernuum
The excellent specimens in this lot, convince me that
Nuttall was right in making it a new species; the
is *T. elatum* Nutt. in Herb. Acad. & the same which
Buckley called *T. canescens*. I hope it is not necessary
to adopt the scoundrels name. It is intermediate
between *T. cernuum* & T. flavescens. It differs from
the former in its longer & narrow lower glume &
from T. flavescens in its hairy ovary & more robust
habit generally.]

5019! *Trisetum subspicatum*, var. *muticum* Bol.
There seems to be but little doubt that these sp.
must be referred to this species.

6104! *Danthonia sericea* Nutt.

4705! *Poa brevifolia*. Muhl.
[Judging from the description & Reichenbach's figure
it will do for *Poa cenisia* All. of which I have
no specimens for comparison. It is certainly not P.
brevifolia Muhl.] [

6113! *Atropis californica* Munro.

5073. 5068! 5076! *Poa alpina* Lin.

6115! *Poa sylvestris* Gray. older specimens agree
very well with those sent to me by Dr. Engel.
[Probably this species with the palea less pubescent]

6014! *Poa leptocoma* Trin.
[This is the same as Parry's No 376. doubtfully referred to
P. arctica, in the Enumeration. I cannot at present
do any better with it than to consider it a form
of *P. arctica*, R.Br. P. leptocoma Trin is described
as having abundant wool which this has not
longer leaves.]

6126! *Eragrostis poaeoides* var. *megastachya*

6125! *Eragrostis pilosa*, Beauv.

6074! Brizopyrum Douglasii. Hook.
5026. Glyceria pauciflora, Pres. (6111)!
6108! Glyceria fluitans. R.Br.
5044! 6114! Glyceria airoides. Thurb.
Glyceria nervata. Not numbered
Lophochlaena Californica Nees
6075. Melica imperfecta. Trin.
6076! Melica poaeoides Nutt. This form was
~~6119a~~ 6120! also collected on Mt. Dana.
6121! Melica poaeoides var inflata Bol
6119! Melica poaeoides, var bromoides Bol.
4698! Melica poaeoides var. acuminata Bol.
Melica stricta, Bol. No 47 of sets.
Melica poaeoides, var breviaristata Bol. (my
number 53 of sets) Redwoods Humboldt Co. 67. also
at Santa Cruz. Col Munro considers this a new
sp. of Melica & Prof Thurber left it undetermined.
4881! Melica aristata sp. nov. [∧]
6118! Festuca microstachya var ciliata
6073. Festuca pauciflora. Thurb.
6100! 5067. 5066! Fest. violacea Gaud??
[This is called F. rubra in Parry's Rocky Mt
Plants, and is the F. rubra of Bourgeau's Coll.-
Bentham puts F. rubra under F. ovina and, as I
think very properly. Grisebach quotes F. violacea
Gaud. as a variety of F. ovina & this should
be F. ovina var rubra, or violacea if it more
nearly resembles Gaudin's plant.] Mt Dana. Alt. 11.000 f
6185! Elymus condensatus Presl.
6080! Elymus Sibiricus L.
5023! Triticum caninum Schreb.
[This is what I have called, from descriptio

only! Triticum violaceum, Horn. — vide Andersson, Gram. Scand. p. 5. We have no root to these specimens]

6468. Triticum aegilopoides
Could it be T. divergens Doug.

[No specimens either in Brewers or the Surrey set]

6110! Triticum repens mixed T. aegilopoides. Torrey

[Bolander speaks of an undetermined Festuca. "It is the last Festuca of my sets and 4704 of late". In either case I have no specimens to identify it by; though I have several undetermined Festucas in Brewers own collections.

4669! is a Lepturus which B. speaks of working out & I suppose I had better not interfere: It is quite distinct from L. paniculatus Nutt. in its simple spike, the position of its glumes, and palea with a tuft of hairs at the base &c. It should be compared with exotic species.]

Dear Doct. Gray - Being housed with "capillary bronchitis"
I have improved the opportunity to write out these
notes on Bolanders grasses. Will send Darwin soon -
I return all B's. mss. & letters Truly G.T.
Feb 3d - 68 -

*

6123 – Phalaris amethystina Trin.
Specimens without the purple tinge, as frequently occurs. – Locality not given –

6070 Hierochloe macrophylla. Thurb
I consider this a good species, though Munro regards it as a form of H. borealis – It has shorter & differently shaped glumes & mucronate sterile florets – Red Wood, Coast Range. June –

4840 – Panicum dichotomum L. –
A hairy form which in its "dichotomous" state is P. thermale, Boland. – Yosemite Valley June.

6097 – Stipa Kingii. Bolander –
Apparently a new species – Upper Tuolumne meadows – Alt. 11

6109 – Stipa viridula Trin Big-tree Grove

5020 – Stipa occidentalis Thurb
Yosemite Trail – 8000 alt. –

6092 - *Vilfa depauperata* Torr -

A very variable species - this is the form called Sporobolus nodosus in Herb. Acad -
Yosemite Valley, June,

6091 *Vilfa depauperata* Torr
Var filiformis -

Brewer collected this in the Sierra Nevada, without number - I then made it a variety of V. depauperata & an examination now confirms that view - It is precisely the same as that named in Herb. Acad. Sporobolus filiformis by Nutt. If this be kept distinct there are six or eight others that must be so - Many florets in this have a distinct micro - but it is not constant - I fear that V. cuspidata will have to come in also -
Yosemite Valley - June

6124 - *Vilfa exigua* Trin ? -

I have had this for some years & must either call it as above or make a new species. It does not quite agree with Trinius' figure, but better than his two descriptions do with one another - It is the best I can do with it.
Sonora -

4836 - *Sporobolus airoides* Torr -

San Joaquin Valley, June

6095- Sporobolus asperifolius Nees & Mey.
with smoother leaves than I have before seen.
Mono Lake. Sept -

6096. Sporobolus ramulosus H.B.K.
Mono Lake, Sept.

6082 Polypogon Monspeliensis
San Francisco -

6083 - Gastridium australe Beal -
San Francisco

6090 - Aira arundinacea Trin
var pendula Gray -
I have not seen this from California before.
Big Tree Grove, July.

6093 - Muhlenbergia gracilis Trin
Calycodon montanum Nutt!
Yosemite Valley.

6103 - Agrostis [illegible] ?~~exilis~~ Trin?
No Locality

([illegible])

Please compare this as I have only some shade-grown "slender" specimens.

6107 - Agrostis scabra Willd
a paler one on a separate sheet marked "with 6107"
I take to be the same -

4954. Agrostis – in an abnormal state probably No 6103 gone crazy – One specimen has empty glumes & in the other the spikelets are deformed & fasciated.

5070 – Agrostis ~~varians~~ [illegible] alpine form –, Trin
Agrees quite well with an authentic specimen "No 217 Brewer" – River bed of Upper Tuolumne – 10,000 alt.

6081 – Agrostis verticillata Vill.

6102 – Agrostis Hillebrandii Thurb. San Francisco –
Mariposa Big Trees –

4801 – Agrostis [illegible] virescens H.B.K.
~~Boland~~ Munro's determination & it agrees ~~[illegible]~~ [illegible] fairly with the description – ~~but~~ I suspect ~~he~~ has the ~~same~~ thing under two or three other names,
Anderson Valley – Coast –

~~480~~
6078–6079 – Agrostis exarata Trin –
Bolander in his list calls this A. asperifolia, and in his letter to you of Dec 10 – thinks he has made a discovery by finding it to be A. exarata – I long ago put the two together & only kept them separate lists on Bolander's assurance that they grew in diff't soils, blossomed at diff't times & had noticeably diff't anthers.

4648 – Agrostis exarata Trin.

This seems to me only a very starved form of A. exarata. No locality is given but I had it before from Bolander, marked "sterile soil anthers half the size of a pin's head." It would be well to observe if the starved forms of this do not always have anthers reduced in size – I have specimens only 2 inches high – Not on list –

5064 – Agrostis Scouleri Trin.?

Agrees very well as to the spikelets but leans more ways to the panicle – Please compare if you have any specimens. No locality Please return

6106 – Agrostis [illegible] Trin.??

6472 – A. canina probably an [illegible] No loc –

6094 }
6101 } Vaseya comata Thurb

No 6094 – for which no locality is given is remarkably fine specimens, some 2 1/2 ft high – with purplish panicles & the culms ~~more~~ or less [illegible]. No 6101 – Yosemite Valley is a much smaller form with narrow, pale green & often interrupted panicle.

6098 – Calamagrostis Breweri Thurb –

add Descr –

4766 – Calamagrostis Lapponica ?

cf – [illegible] – my specimen imperfect.

6470 - Calamagrostis sylvatica. Trin?
Has the general appearance of Parry's plant as determined by Gray. but the hairs of the floret are much longer. not in list.

6084 Calamagrostis Aleutica Trin
Oaklands. fine -

5071 Calamagrostis sylvatica
var. purpurascens -
Same as Parry's No - & Hills about Harbor

6087
~~6086~~ Calamagrostis Canadensis Beauv -
Yosemite

6471 - Calamagrostis -
vide note with specimen - Revise the genus -

6072 - Aira danthonioides Trin
~~native~~ Oakland -

6071 Aira caespitosa
"var. densiflora" Boland -

6112 - Aira Caespitosa
no loc -

6086 - Aira Elongata. Hook
no loc -

6122 - Trisetum cernuum.
Woodland

6128 – Trisetum [illegible] Steud. Syn. Gr. – 229. 8
I think this must be a pubescent form of Steudel's
plant – It has the longest spikelets of any other
I have seen & in aspect much like a Bromus
Steudel quotes Bromus, no. 860 Berter. herb.
Solander's 1557 ~~shows~~ of an earlier collection
show the branching habit described by Steudel.

5019 – Trisetum subspicatum
var. brevicarinatum –

Culm about 2-feet high with broad leaves
& an elongated interrupted ~~spike~~ panicle.
Glumes generally shorter than the florets,
~~upper~~ lower palea mostly obtuse, some-
times entire & short awned – I agree with
Mr Bolander in considering this an awned
variety of T. subspicatum & were the character
I constant should call it a species, but the
4 or 5 specimens sent vary much among
numbers – Upper Tuolumne – Alt. 7,500

6077. Trisetum elatum, Nutt. Herb. Acad.
This is intermediate between T. cernuum & T.
flavescens. From ~~cern~~ the former it is dis-
tinguished by its denser & strict panicle & its
longer narrow lower (?) glume. Its hairy ovary
& more robust habit distinguish it from T. flaves-
cens – 6077 no loc. – 4744, a much larger plant
velvety pubescent. shorter & denser panicle – no loc.
describe this.

6104 – [illegible] [illegible] – [illegible]
Yosemite Falls [illegible]

6074 – [illegible]
[illegible]

6075 – [illegible] – Californica
[illegible] –

6059 – Melica [illegible]
Yosemite Valley

6070 Melica [illegible]
San Francisco –

4861 – [illegible]

6120 – Melica [illegible] –
This is the typical form – [illegible]
& a variety, [illegible] – Yosemite Valley

4698 – M. [illegible]
[illegible]
Elongated [illegible], [illegible]
[illegible]
[illegible]

6119 – M. [illegible] – [illegible]
[illegible]
[illegible] –

6066 – Festuca ovina
This is a form [illegible] called F.
[illegible] [illegible] [illegible] of
[illegible] [illegible] – [illegible]
[illegible] [illegible] – [illegible]
[illegible] [illegible] [illegible]
[illegible] – [illegible]
[illegible] of [illegible] – [illegible]
[illegible]

6512 – Festuca [illegible]
[illegible]
[illegible]
[illegible] –

6118 Festuca [illegible]
[illegible]

2104 F. microstachys
[illegible]
A very [illegible] form [illegible]
[illegible] – [illegible]

6125 – Deyeuxia [illegible]
[illegible]

4705 – Pro Caecilia Ode ?

[illegible] [illegible] [illegible] – [illegible] [illegible]

[illegible] [illegible] [illegible] [illegible] [illegible]

[illegible] [illegible] [illegible] 26 [illegible])

[illegible]

* 5060 – [illegible] [illegible]

6135 – [illegible] [illegible] [illegible] ?

[illegible] [illegible] [illegible], but [illegible] [illegible] [illegible]

[illegible] [illegible] –

* 66– [illegible] – [illegible], [illegible]

[illegible] [illegible] [illegible] [illegible] [illegible]

6685 – [illegible] Combination [illegible]

[illegible]

* [illegible] – [illegible] [illegible]

No 55. Agrostis articulata
Moist places at San F. June. This is very common in ditches with Poa annua & blooms all the year round.

No 56- Phalaris Amethystina
According to Prof H. Common Oakland. June -

57
Salt marshes. Oakland

58 & 62 are ferns.

Notes on Bolander's Collections in Sets -

San Francisco.

1-77

No 53

This peculiar grass I found in a gulch near the summit of the coast ridge on the road from Sta Clara to Sta Cruz. June 1864. It grows in large bunches in loose soil under large redwood trees. All the specimens given are small ones as the larger broke up at the slightest touch. Culm 3-7 ft high. Panicle club-shaped, contracted (slightly bent towards the apex) mostly one branch far below the main panicle, 3-11 inches long. The awn of the larger & older is far better developed, but not uniform. Perennial. After having examined it I doubt no more that I met the same grass in a very young state at Ukiah. I took it then for a form of Melica poaeoides or a Bromus.

No 54. Bromus Festuca microstachys, Nu.

Dry hill sides. Ukiah April. Seen the same at Searsdale. June. but the flower broke up at the least touch.

No 15. Aira elongata. Hook.
April. Moist places S. F.
Quite common, in deep shade
very much elongated.

No 16. Hordeum pratense. Trin
April – May – Oakland.
Common –

No 17. Elymus condensatus. Presl
June. Oakland. Common –
All my specimens do not show
that size which this plant attains
in ordinary seasons. They
might have been omitted
for fully developed it is a huge grass.

No 18. Agrostis asperifolius?
Swampy places. S. F. Anthers size of
a pin's head. Sometimes very large
panicles interrupted.

No 19. Polypogon (fugax Nees)
Salt marshes. Oakland. June. Comm
This was considered by Prof. Th. the
var. fugax but it seems to me ac-
cording to my observations that it
is a true species. It is earlier leaves
less wide & of a dull green color forms

Notes on Grasses by H. N. Bolander
Sent to Doct. Gray Jan 20th 1865 –

No 1 Agrostis pallens Trin
June – on loose sandy soil near the
San Jose R.R. about 10 miles below
the City. Stoloniferous. anthers large (3)
This form had not been sent to Prof.
Thurber last summer.

No 2. Gastridium australe. Beauv.
Dry hills. San Francisco July. This
grass I have met with in all parts
of California; it follows Atropis Calif-
ornica & Avena fatua. It seems
to be a native.

No 3. Calamagrostis ~~deschampsioides~~ sylvatica Trin
Redwoods near Redwood City. June –
It forms large tufts. Noticed from
Sta Cruz up to Tamal Pais North of S. F.

No 4. Calamagrostis Aleutica. Trin.
Oakland Redwood Hills. June. Grows
in large tufts, often 4–6 feet high;
the blade of the leaf breaks off, leaving
the sheaths in a dense mat for
many years. In winter it is eaten
by cattle. Grows also abundantly
on rocks west of this City expos-
ed to the heavy west wind.

No 5 Agrostis exarata Trin - annual -

Wet places, Searsville. June - Anthers about the size of a pins head.

No 6 Hierochloa (macrophylla)

Redwoods, April - June
Very strongly scented, grows some times in the shade of low redwood trees. Near Searsville I found a tuft in a canon over a foot in diameter in all stages of growth. Prof. Thurber thought it might prove to be a new species.

No. 7. Trisetum cernuum Trin.

Common in glades & some meadows but there always near bushes. S. F. Apr - June. Prof Thurber says a new sp.

No 8 Panicum thermale Bolander.

Warm loose soil, ~~east of~~ at the Geysers Sonoma Co. April. The form upon which I based my description was still more pubescent & much smaller.

No 9. Brizopyrum Douglasii Hook.

Loose drifting sand west of S. F. April. both male & female plant.

No 10. Danthonia Californica Bolander.

April. Meadows near Oakland. Forms large tufts, culms first ascending & then declining, so that the panicle rests on the grass or the ground, quite an obstacle to the pedestrian

No 11. Stipa eminens Cav-

April. Dry hills. S. Francisco.

No 12. Ceratochloa grandiflora Hook.

April. Common everywhere, S. F. I added a panicle of the largest form it generally assumes near the bay. The perfect specimen is from meadows.

No 13 Melica imperfecta.

April. moist hill sides San F. Forms very large tufts covering much ground. Quite common.

No 14. Festuca microstachys Nutt.

April: on loose sand San F. This form appears early and passes soon away.

No 43. Atropis Californica
Meadows S. F. Common. April.
No 44. Festuca microstachys Nutt.
Shaded woods. Cloverdale. April
An attenuated form.
No 45. Elymus sibiricus
Meadows. Cloverdale. April.
No 46. Festuca scabrella Torr.
"Bunch Grass" Ukiah. April.
Shaded hill sides (in park land) common.
No 47 Melica ~~mutica~~ nevadensis Thurb. Walt
Virginia City. Dry rocky places. June
This is what Prof. H. made it.
Dr Hillebrand collected it also in
California near the Yosemite Falls.
No 48. Hordeum murinum
Spring Valley. S. F. in lots. April.
No 49 Lolium temulentum.
Among grain. Oakland, Apr. Very common.
No 50 Carex
No 51 Carex Hookeriana
No 52 Carex

immense large tufts. Here & there I see the true P. Monspeliensis among it, making itself quite conspicuous. This var. also grows on roads considerably travelled, but I have not seen the other true form. It deserves some attention at least. The relation in regard to numbers would be 1000 of the var. to 1 of the true form.

No 20 Carex globosa Boott?
No 21 Carex Hookeriana
No 22 Carex?
No 23 Festuca Myurus L.
May. meadows & hills. S. F.
No 24 Polypogon Monspeliensis. Desf.
Wet places S. F. June & July.
No 25. Sitanion Elymoides Raf.
Dry hill sides. S. F. common May-June
No. 26. Festuca microstachys. Nutt.
Dry hills. S. F. This large form of this variable grass ripens much later.
No. 27. Carex Sitchensis
No 28. Avena fatua L.
San F. Hills & meadows. May.

No 29 Trisetum ~~[illegible]~~ barbatum Steud.
Cultivated fields, March - April. S. F.

No 30. Agrostis exarata Trin.
Canons at Oakland. May. Anthers size of a pins head.

No 31. Koeleria cristata Pers.
Dry hills. S. F. April.

No 32 Melica poaeoides Nutt.
Dry places. S. F. April - May. often much thickened at the base of the culm.

No 33. Aira danthonioides Trin.
Cloverdale, Sonoma Co. Cal. April. Fields, also in wet places. S. F. in the spring.

No 34. Agrostis pallida Trin?
Meadows at Cloverdale in large patches. April. This the farmers call Red Top of California. It is the first time I have met with it. Farmers dont like it.

No 35 Alopecurus pratensis
Ukiah City - Wet places in meadows, April.

No 36. Beckmannia erucaeformis
Wet places Ukiah City April. In the wet meadows further north it forms a part of the principal bulk of the hay.

No 37. Festuca microstachys
Woods. Geysers. Sonoma Co. Apr. a pubescent form.

No 38. Phalaris intermedia.
Meadows. Ukiah. April. The farmers call it Timothy.

No 39. Carex

No 40. Melica poaeoides var?
Shaded hill sides, loose soil. Ukiah, April. It generally grows in bunches of considerable size. The bulbous part of the root is often (when fresh) nearly 1 inch in diameter. They are clustered like in the same plane attached to each other. They shrink in drying altogether but are seemingly solid when fresh, the various layers easily discernible with the naked eye. It is quite common. 3-6 ft. high.

No 41. Lophochlaena californica
Santa Rosa. Wet meadows. April. Quite common in places where the water remains. Liked by cattle.

No 42 Agrostis. pallida Trin?
Dry clay soil. Ukiah City April. Anthers the size of a pins head.

No 53. Bolander same as 31 Bolander named by Col. M. in April
"I believe it to be a new species of Melica & I forget if I have
suggested a name but if not I would now suggest Melica
aristata"

Notes on Bolanders set of numbered grasses:

~~No X~~ Agrostis pallens Trin? – which Munro refers to
A. exarata – It seems different to me –
No 18 – A. asperifolia Trin. This Munro also makes a ~~Syn~~ of
A. exarata –
~~No 5~~ & 30. A. exarata ~~Trin~~ – & No 5 the awned variety –
No 34 & 42 – These are puzzles – I ~~put~~ them down for
the present as forms of the European A. pallida &
they seem to be both from new settlements & may be
introduced. They are much larger than any specimens
but No 42 – compares very well with Trin's figure. The
flowers seem to be identical in everything but size –
19 – Polypogon fugax – Bolanders memoranda as to time & habitat
would go to show it a species & I notice that Munro sends the
Himalayan plant as distinct –
~~No 6~~ Hierochloa macrophylla. Th. –
Buckley described one of Nuttalls fragments as H. occiden-
talis, I have no means of determining if it is the same & he
makes it a short leaved one – I at the time put that
down as H borealis.
~~No 3.~~ Calamagrostis sylvatica Trin probably but very young – I
dont see how I got deschampsioides down upon my list to Bolander
as that is very diff. – I have not this –
No 47 – Melica Nevadensis Thurb. ms.. smooth specimen, which
Bolander first sent a single & nearly smooth specimen, which ~~to~~ sent older
appeared like M. mutica. Brewer afterwards than these –
Specimens from alt 8000 ft – & more velutinous
No 40 – I have seriously considered this grass & can only
make it out a remarkable form of Melica poaeoides – Nutt. –
I have other equally wide departures from the typical form:
and I must dispose of this in this way or make 3 or 4
new species for somebody to put down –

7- *Trisetum cernuum* - — Numbers were changed in Bolanders 1st set - the one I could did not name is 29 of his present coll.

29- *Trisetum barbatum* - Steud -
I had a fragment of this long ago from Ives Colorado Exped. but these are the first good specimens I have seen.

45 Elymus Sibiricus

8 Panicum thermale Boland is probably only a form of P. dichotomum - but we will let him have the name until it is settled what belongs with that species.

54 I take for an unusually luxuriant form of *F. microstachys*

Notes on Bolanders Grasses
1868 –

Phalaris amethystina
" arundinacea
Hierochloa macrophylla
Stipa Kingii and [illegible]
Calamagrostis [illegible]
Holcus [illegible]
Panicum [illegible]
" [illegible]
Eriocoma cuspidata
Stipa setigera
" [illegible]
" [illegible]
" [illegible]
" [illegible]
" [illegible]

Agrostis [illegible]
[illegible]

Enumeration of Bolanders Grasses — 1868 —

* Phalaris amethystina. Trin

Phalarid. p. 10 —
Some of the specimens are, as often occurs, with the purple tinge.
[No locality given; not on Bolanders lists, but in Brewers set & state Coll.]

Phalaris arundinacea Lin.

~~Phalarid~~.
[Not in Brewers set or our list —
2 State Coll. marked "Koeleria
cristata, July 4, 1866. Alameda"]

Hierochloa macrophylla Thurb.
in ~~Ca~~ California Geolog. Survey
ined.
Bolander states that Munro considers this a form of H. borealis. The specimens ~~belong~~ seem to me to belong to a different species. Aside from the long leaves (12'–18' long & 4"–6" wide) the glumes are always strongly 3-nerved & greenish, very obtuse & barely equalling the sterile florets, which are —

notched at the broad apex & often with a mucro or short awn. Redwoods, Marin Co. 6070 – Should be compared with H repens, Host.

Holcus lanatus Linn.

In State collection only – without number or locality.

Panicum sanguinale Linn

6127 – In State Coll. only.

Panicum dichotomum Linn

A shaggy pubescent variety. Yosemite Valley. 4840.

Eriocoma cuspidata Nutt

Mono Pass. dry places. Alt. 7000 ft. In State Coll. only. No number

Stipa setigera Presl. Rel. Haenk. 1-226 – S. Neesiana, Trin & Rupr. – Very fine specimens with the copious panicle beautifully tinged with violet.

[Not in Brewer's set – In State Coll without number marked "Monte del Diablo 0/4. Stipa Eminens"]

3

[In Bolanders' 2d list he has 4802, Stipa setigera - & says 'I called it S. eminens in his published sets - I have no set & cant tell - I believe that the only distinction is that S. eminens has the palea hairy all over & the other only partially hairy.].

Stipa chrysophylla. E. Desv. Specimens much taller (1½°–2°) than the Chilian ones, but in other respects the same. The long setaceous leaves equal the culm, & mainly of a yellowish color. Awn below the geniculation beautifully plumose with white silky hairs.

[Not in Brewers set - In State Col- No 6117; without locality & not on Bolanders lists]

Stipa occidentalis Thurb. - in Ind. Report of Cal. Geolog. Survey. - Rays of the narrow & few flowered panicle appressed; florets sparingly hairy & distinctly coronate; awn 1½', usually twice bent & plumose to the upper geniculation with rather coarse hairs. Yosemite Trail, alt. 8000 ft. 5020 (Brewers set & 5038 in State Set)

collected in Oregon in the U. 4
S. Expedition -

Stipa comata Trin -
Mono Lake [without number &
not in Brewer's set]

Stipa Sibirica - Lamarck?
Mono Pass. Alt. 8000 ft - 6116 -
[not in Brewers set. This Bolander
doubtfully refers to S. Richardsonii
long upper portion
Its contracted panicle, caducous
awn & short vaginae separate
it from that - I have no specimens
of S. Sibirica ~~but~~ & wish you would
compare with specimens or Ledeb.
Icon. Fl. Altaic. t. 99]

Stipa viridula. Trin.
Some specimens very slender with the
narrow panicle much elongated.
Yosemite Valley & Big-tree Grove.
~~6469-6109~~ 4692-4865-5078-6099-
6109-(6469-not seen)

Stipa Kingii, Boland. n. sp.—

Culms smooth caespitose slender. ~~[illegible]~~ 1 foot high; nodes 2 — ~~[illegible]~~ near the base. Leaves; radical, 6 inches long setaceous; ~~minutely~~ scabrous. Culm leaves similar, about 2' long. Ligule 1''' toothed at apex— Lower vagina longer than the internode

Panicle 1'-2' — narrow — scabrous rays, the lower mostly ternate — less than 1' 2 ~~[illegible]~~- flowered. upper 1-flowered. Spikelets 2'''— Glumes obtuse, eroded & sometimes mucronately pointed at apex when young beautifully violet tinged; the lower ~~half~~; lower 1/4 shorter. the lower floret about equalling the lower glume — fusiform — stipe short with few short hairs — upper palea 5-nerved. more or less tinged with purple — & ~~villous~~ sparingly hairy — corona not prominent. awn persistent. 4''-6'' long — twisted & roughened upper palea — equalling the lower not involved by it & hairy on the back — Anthers bearded at the apex —

A very pretty delicate species allied to S. mucronata, from which it is distinct — The violet colour of the spikelets is very distinct in the young plant — (Thur.)

Upper Tuolumne meadows alt.
9.700 ft – "In honor of Clarence
King, my gallant chief in the
expedition of 1866. across the
Sierra" (Bolander's No ~~6077~~ 6097

Calamagrostis Breweri. sp. nov. -

Culms caespitose, 6-15 inches high - slender, erect or slightly geniculate at the lower nodes -

Nodes 2 - one at the base of the culm & the other below the middle, blackish.

Sheaths much shorter than the internodes - smooth -

Leaves - ~~radical, 2-4 inches long~~ less than a line wide, mostly convolutely setaceous, slightly scabrous under a lens. those of the radical tufts 2-4 inches long. Culm leaves 2, the lower 1-1½ inch, the upper less than 1/2 inch in length.

Ligule over a line long, acute.

Panicle - long exserted, pyramidal, open - 1-2 1/2 inches long - rays mostly 1-3 - but in some of the larger specimens in fascicles of 6 or more; lowest 1/2-1 inch long - 1-3 flowered.

Spikelets about 1½ lines - purple - upper glume slightly longer. both 1-nerved acuminate, slightly scabrous on the keel above -

Floret equalling the glumes.

Lower palea obtuse, often lacerate at the apex - 5-nerved, one or more nerves prolonged into short setulae

Hairs at base 1/3 the length of palea

Awn attached near the base, 1/3 longer than palea, minutely strigose, slightly roughened, slender, purplish above.

Upper palea equalling the lower, bifid at apex.

Rudiment including the hairs 1/4 shorter than floret. Hairs not very copious, & the course is about ½ a line long.

First collected by Prof. Brewer in Aug 1863 near the summit of Carsons Pass alt. 8000 - & by Mr Bolander in 1867 (?) in the meadows of Upper Tuolumne at an altitude of 9700 ft - -

4648. Agrostis exarata Trin.
I take this to be only a starved form of the polymorphous A. exarata. No locality is given, but the same plant previously received from Bolander was marked "sterile soil, anthers half the size of a pin's head". It would be well to observe if the awned forms of this species do not always have reduced anthers. Some specimens ~~are~~ only 2 inches high
[Not in Bolanders list]

Poa caesia All.? (4705.)
Bolander has this as P. brevifolia Muhl. which is incorrect. I have no specimens of P. caesia, & refer it as above from descr. Reichenbachs fig.

1669 Lepturus Bolanderi
(n.sp.) Thurb.

K Sclerochloa Californica, Munro What is the name of this grass to be? I believe it is Melica poaeoides Nutt. Gaud.!

No. 7 = Poa stenantha.
or some thing of that
sort, = Festuca Menziesa Hook.?

I have — or had Poa ste=
nantha, leptocoma. &c
in my Herb. but cant find
them. Did I lend them
out to you?

Mem. — Lophochlaena refracta. n. sp!

Mem. Bolander's no. 53. Calif. (1st set.). is, in my mind, a congener, = Lophochlaena *melicoides*

I *think* it is your *Melica aristata*, — which I have not. All these Calif. Geol. Survey Grasses have not been laid out for me. Remember I am to have a set. Have you the *stock* of these Grasses, or only a set for yourself? Can you send me a little of your *Melica* aristata?

Notes on Grasses of the California State Survey — Copied & sent to Prof. Brewer — Dec 21.

8 — 1. 60. ~~[illegible]~~

An Enumeration of the Grasses.
collected in the California Geological Survey.
by Prof. Wm. H. Brewer & H. N. Bolander Esq.

Phalaris intermedia, Bosc in Poiret, Encycl. Suppl. 1. p. 300.
P. microstachya DC. P. Americana Ell. P. angusta Nees.
P. trivialis Trin. P. occidentalis Nutt. P. Californica Hook & Arn.
Nipoma (418) & Livermore Pass (208), Brewer. Oakland (1530) Bolander.

Phalaris amethystina, Trin. Phalarid. p. 10?
Monterey (665) Brewer and Angel Island (1529) Bolander. It
This is doubtfully referred here from the character only. It
appears to be distinct from any form of the variable interme-
dia that I have seen. The keel of the glumes is narrower;
perfect flower lanceolate, ~~much~~ not pointed or as hairy as
in the preceding. Imperfect florets longer. Forms tufts 2-4
feet in diameter & grows 5-6 feet high. Spikelets tinged
with purple.

Hierochloe [illegible] ~~borealis~~, ~~Roem. & Sch.~~ Syst 2. p. 513.
Marin Co. (no number) Bolander. which has been called
A large form with very long leaves which has been called the same collect-
H. repens. (A single specimen was sent by the same collect-
or under the name of H. fragrans (in a letter). That species is
united with H. borealis & the specimen does not agree with
the description. It differs from H. borealis mainly in its
shorter glumes, emarginate staminate flowers & truncate
hermaphrodite flower, which latter is smooth. It seems
to be new, but it is not safe to describe from a single
specimen.

Panicum thermale, Bolander in Proc. Cal. Acad. Nat. Sci. 1862. p. 181.

The densely velvety foliage is different from any species with which I am acquainted. The specimens sent are probably not the normal form of the plant which appears, similar to P. dichotomum, to form clustered branches bearing depauperate panicles.

At the Geysers, Sonoma Co. (861) Brewer – 1538 Boland –

"This grass is only seen near the Geysers; grows often in soil highly impregnated with acid ~~of~~ sulphates, salts, and also on the silicious sinter near the springs" Prof. Brewer.

Stipa setigera Presl. Rel. Haenke, 1. p. 226.

S. Neesiana Trin.

(1262) "The most common and valuable "bunch grass" of the dry hills." Brewer.

Stipa chrysophylla, E. Desv. in Gay, Fl. Chil. 6, p. 278, t. 70, f. 2.

Sta Inez Mission (530) Brewer.

This agrees with authentic Chilean specimens except that it is two or three times as tall. A fine species and readily distinguished by the delicate silky hairs upon the lower part of the awn.

Stipa eminens. Cav. Ic. 5. p. 42.

S. mucronata. H. B. K.

"Common on all the hills; forms in many places the principal grass" 1532. Boland.

Aegopogon cenchroides, Willd. Spec. 4. p. 899.

Loc? Mr Bauer (1560)

A Texan & Mexican species which I have not before seen from California

Gastridium australe, Beauv. Agrost. p. 21, t. 6, f. 6.

Common on dry hills. San Francisco (1537) Bolander who considers it as undoubtedly indigenous.

- Phleum pratense, Linn. Sp. p.87.

Santa Cruz (805) and Mt. Shasta (1436) Brewer

Phleum alpinum, Linn. Sp. p.88.

Fort Point, San Francisco (1536) Bolander.
A form approaching the var. tenue.

Alopecurus pratensis, Linn. Sp. p.88.

Walnut Creek (1042) Brewer.

Muhlenbergia debilis, Trin. Gram. Uni. et sesquifl. p.193.

M. purpurea, Nutt. Plant. Gamb. p.

San Luis Obispo, (466) Brewer, ~~[illegible]~~

Vilfa rigens ([illegible] rigens)

Deer Creek Cañon (1468) Brewer. "Forms large bunches 6 or 8 ft high"
[This may be a new species near V. rigens Trin or one of
the allied published species. I cannot decide until I can
see Trin. Icones. which are not in N.Y.]

Polypogon Monspeliensis, Desf. Atl. 1.p.66.

Los Angeles (25) Brewer; San Francisco (1523 in part) Bolander.

Polypogon Monspeliensis var fugax

P. fugax, Nees in Herb. Royle.

Mission Dolores (1513) & Roads, common (1523, in part) Bolander.
This has a quite different habit and is considered
a good species by some botanists. The fact that the
specimens were collected indiscriminately with the
normal form, confirms the judgement of Trinius
who referred it to P. Monspeliensis.

Agrostis exarata, Trin. Gram. Uni- et sesquifl. p.208 & Ic. Gram. t.27.
Very common (1515, 1516, 1518, 1520, 1521) Bolander.
This frequently occurs in collections from the Pacific & is a most variable species, differing much in foliage, length of upper palea & in the presence or absence of an awn. The height of the specimens varies from two to three inches to as many feet.

Agrostis asperifolia, Trin. Agrostid. 2. p.71.?
Monterey (658) Brewer; San Francisco (1519) & Angel Island (1522) Bolander.
The specimens accord well with Trinius' description but Col. Munro, who is very high authority, makes the species a synonym of A. exarata. These certainly seem distinct from that species and Mr Bolander notes that they flower much later. In the absence of authentic specimens or figures for comparison it is impossible to come to any satisfactory conclusions. The leaves are remarkably rough & the florets awned or awnless. The grass referred to A. microphylla Steud. by Torrey in Whipple's Report is apparently a small form of this.

Agrostis verticillata, Vill. Delph. p.74.
Santa Barbara (376) Brewer; Pacheco's Peak (1296) Brewer
San Francisco (1514) Bolander.
A widely distributed grass & apparently indigenous to California though it is a common weed in gardens.

Agrostis vulgaris, With; Kunth. Enum. 1. p.220.
Santa Cruz (804), Brewer; San Francisco (1517) Bolander.

Agrostis alba, ~~Trin.~~ Schrad. Germ. 1. p.209.
San Francisco (1559), Bolander.

Calamagrostis Aleutica, Trin. in Bong. Veget. Sitcha, p. 171.

Redwoods of Marin Co. Bolander (no number)
A large & well marked species growing in bunches on high hills. Panicles, only seen, there are purplish. Awn inserted above the middle of the palea and about equalling it.

Calamagrostis deschampsioides, Trin.

Redwoods of Marin Co. Bolander. (without number)
Has ~~the~~ very much the habit of the preceding but the long twisted awn is attached near the base of the palea.

Spartina stricta, Roth. Cat. Bot. 3. p. 9.

Salt Marshes. San Francisco (1556) Bolander.

Avena fatua, Linn. Spec. p. 118.
The "wild oat" of California "Very common on the low hills of the coast ranges. Very variable for size and very valuable for forage" Brewer #(569)

Aira holciformis, Steud. Syn. Plant. Glum. 1, p. 221. ?
Deschampsia holciformis, Presl. Rel. Haenk. 1. p. 251.

Oaklands (1524) Bolander.
Fine specimens over three feet high of what is probably this species though it does not quite answer the description as to the awn.

Aira elongata, Hook. Fl. Bor. Am. 2. p. 243, t. 228.
Abundant in both dry & wet places (1525) Bolander.
The hairy pedicel of a third floret is not represented in Hookers figure but it is quite conspicuous in the specimens.

Aira danthonioides, Trin. in Act. Petrop. (1830) 1. p. 57.

Mt. Diablo (1183) Brewer

Aira caespitosa var. longiflora, Trin. Act. Petrop. 4. suppl. p. 8.

Eureka – cp Bolander –

Trisetum cernuum, Trin. in Act. Petrop. 1830. 1. p. 61.

San Francisco, common, (1552) Bolander.

Trisetum barbatum Steud? Syn Glum 229 –

Bolander (1551)
[Specimens old & all the florets fallen - would like specimens collected earlier as it seems different from any I have seen and may be new]

Dantonia Californica, Boland. in Proc. Cal. Acad. Nat. Sci. 1862. p. 182.
Common on dry hills (1533) Bolander.
Mr Bolander in his notes suggests that this may be D. secundiflora, Presl. but it does not seem to agree sufficiently well with the description of that species. The spikelets are much larger than D. spicata; glumes not equalling the upper florets; rachis with very long hairs; lower palea smooth, except on the marginal nerves, which bear about midway a conspicuous fringe of silky hairs. The laciniae of the palea terminate in setae & are 1/3 as long as the palea itself.

Lophochlaena Californica, Nees.; Hook & Arn. Bot. Beechy. p. 403. t. 95.
Walnut Creek, (1043) Brewer & Oakland (1545, Bolander.
Beautiful specimens of this most interesting grass.
Mr. Bolander remarks that the culms are too weak to stand erect and that the grass is much liked by cattle.

Brizopyrum spicatum, Hook. & Arn. Bot. Beechy. p. 403.
Salt marshes (1527) Bolander.
Some long underground stems with sterile culms collected from the sand on the beach at San Louis Obispo by Prof. Brewer [8] seem to belong to the same

Brizopyrum spicatum, var. strictum

Alkaline soils in Puerto Cañon, (1252) ~~Bolander~~ Brewer.

Brizopyrum Douglasii, Hook. & Arn.

Beach, San Francisco. (1528) Bolander.

"This has very long and creeping roots and is usually but 6 inches to 1 foot high, but when protected from the action of the wind by shrubs it grows 3-4 feet high" Bolander -

Glyceria pauciflora, Presl. Rel. Haenk. 1. p. 257.

In a wooded swamp 7 miles south of San Francisco (1554) Bolander.

Glyceria maritima, Wahl. Fl. Gothob. p. 7.

Ten or fifteen miles south of San Francisco. (1555) Bolander. The specimens unusually large probably from growing in an ~~of~~ swamp subject to overflow by the tide. Also from Eureka - the usual form. Mr Bolander notes that this is apparently not eaten by cattle.

Melica poaeoides, Nutt. Pl. Gamb. p.

M. bulbosa. Hook. Pl. Geyer.

Santa Inez Mission 567, (569) Brewer; San Francisco (1540) Bolander.

There seems to be no doubt that this is the same as M. bulbosa, Hook. The bulbous base of the stem was overlooked by Nuttall and most subsequent collectors, but a single specimen from Eureka has a bulb & Mr Bolander notes that the roots of his 1540 is bulb-like. The size and density of the panicle vary very much. Spikelets 2-3 flowered with an imperfect one. The veins of both glumes and paleae inosculate before reaching the apex - a character shown by very few grasses. According to Mr Bolander this species is not eaten by cattle.

Melica imperfecta. Trin. in Act. Petrop. 1838. Suppl. p. 159.
M. panicoides, Nutt. Pl. Gamb.

Santa Barbara (301 & 323), Livermore Pass (1205) & Mt Diabolo (1144), Brewer; San Francisco Bay (1539) Bolander.
Very common, forming large tufts and varying greatly as to size & character of panicle. In some specimens the inflorescence is a simple raceme. A comparison with Nuttalls original specimens shows it to be the same as his M. panicoides.

Melica mutica, Walt. Carolin. p. 78.
Silver City Nevada Terr. (1571) G. H. Dunn.
(Not seen from California)

Koeleria cristata, Pers. Syn. 1. p. 97.
Santa Inez, (537) Brewer; San Francisco (1531). a very large form, Bolander.

Poa pratensis, Linn. Spec. p. 99.
~~San Francisco (1547)~~ Oakland (1547) Bolander.
This in common with other species of Poa, shows a much rougher palea than it does in the Atlantic States.

Poa trivialis Linn. Spec. p. 99.
Mission Dolores. (1548) Bolander.

Poa annua, Linn. Spec. p. 99.
San Francisco (1549) Bolander; Monterey (613) Brewer

"Atropis Californica," Munro in Herb.
San Buenaventura (233), Mt Diabolo (1070 & 1122) and Walnut Creek (10.24) Brewer; San Francisco, ~~Bo~~ (1550) Bolander.
"Squirrel Grass". "Grows in small bunches, the foliage very fine and short and considered of no value. Comes in after the Avena fatua has become exterminated by close feeding" Brewer. Col. Munro has distributed

this grass under the name above quoted but I am not aware that he has yet published a description of it. ~~Bolan~~ It is one of several Poa-like grasses which are found on the Rocky Mountains and on the Pacific Coast which need a more careful study than I can give them with my present materials. Bolander's ~~1557~~ 1550 is in part the usual form & in part of specimens of a much stronger growth & coarser foliage, but otherwise apparently the same.

(Poa 1001 Brewer has no leaves and 1557 Bolander is a single specimen. cant risk naming either)

Festuca Myurus Linn. Spec. p. 109.

F. bromoides Linn. l.c. p. 110.

Monterey (615) ~~Brewer~~ & Livermore Pass. (1196) Brewer; San Francisco co (1506) Bolander.

I follow Mr Bentham in considering these as the same species.

Festuca microstachys, Nutt. Plant. Gamb. p. 187.

Mt Diablo (1077, 1112, 1142, 1182) Brewer; San Francisco (1509) Bolander.

As Mr Bolander suggests, this is too near the above & will probably have to be reduced to it, yet some of the forms have a widely different habit.

Festuca ovina, Linn Spec. p. 108

Eureka (no number) Bolander. No 1508 collected by Mr Bolander at San Francisco is apparently an unusually large state of the same

Festuca scabrella, Hook. Fl. Bor.-Am. 2. p.

San Francisco co (1505) Bolander.

This is probably the plant described by Hooker & is certainly that of Torrey in Whipple's Report. p.

(1507 San Francisco Bolander is a Festuca for which
I have not sufficient materials to name) = "luxuriant form of F. pauciflora, Thurb."

Bromus virens, Nutt. Herb. Acad.
Ceratochloa grandiflora Hook. Fl. Bor. Am. 2. p. 253, t. 235.
Monterey, a small form, (659) Brewer; San Francisco (1546) Bolander.
~~In reducing Ceratochloa to Bromus Hookers specific name~~
~~was found to be occupied I in my report on the~~
~~grasses of the Expl. Exped. had named it B. Hookerianus~~
~~+ so~~
An exceedingly variable plant, often occuring with a very
compact panicle + differing much in pubescence +
length of awns.

Bromus ciliatus, Linn. Spec. p. 113.
San Juan (740) Brewer

Bromus sterilis, Linn. Spec. p. 113.
Mission Dolores. (1544) Bolander. Int?

Bromus racemosus, Linn. Spec. p. 114.
In meadows (1543) Bolander. Int.
(Bromus 1542 Boland. would like to see a more
developed specimen) a form of B. Kalmii?

Lolium temulentum, Linn. Spec. p. 122
Walnut Creek (1000) Brewer — San Francisco Boland.
(The spec. numbered 1527, wh. ich is also Brizopyrum spicatum)
The large form common on the Western coast.

Lolium perenne, Linn. Spec. 122.
San Francisco (1526)

Hordeum pratense, Huds. Angl. p. 56.
H. secalinum Schreb. H. adscendens H. B. K.
Monterey (614) Brewer; Oakland (1534) Bolander

Hordeum murinum, Linn. Spec. p. 126.
Mission Dolores (1535) Bolander – Probably introduced.

Triticum repens, Linn. Spec. p. 128.
Gardens & meadows (1510, 1512) Bolander.
Probably this species but there is no root stock.

Elymus condensatus, Presl. Rel. Haenke. 1. p. 265.
San Juan (735) ~~Brewer~~ & Puerto Canon (1250) Brewer
San Francisco (1503) Bolander.
~~According to~~ Mr Bolander states that this grows to the height of 5–6 feet on the borders of marshes where it ~~gr~~ is dense like a ~~f~~field of wheat.

Elymus Sibiricus Linn. Spec. p. 123
San Francisco (1504, 1558) Bolander

Sitanion elymoides, Raf. Journ. de Phys. 89. p. 103.
Corral Hollow (1220) Brewer. San Francisco Bolander (1553, 1258)

Nos. ~~1258~~ – 1511. 1530. 1541 on the catalogue are not found among the plants. There are several specimens without labels that they are ~~duplicates~~ already represented among the numbered ones.

Ischaemum [illegible] Munro in Proc. Am. Acad. 4. p. 363? –
San Francisco – In front of a Chinese Warehouse –
Probably this species & from its locality doubtless introduced.
It is an interesting grass with the aspect of one of the Chlorideae.